WASHINGTON LETTER.

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Geography and the 54th Congress will be a proper and interesting subject of review. The session just closed was not fruitful of direct legislation which will affect geographical features, but several measures were inaugurated, and some older ones advanced on lines that may modify existing conditions. The subject of internal waterways was prominent.

LAKE SUPERIOR AND MISSISSIPPI RIVER CANAL.—Major Clinton B. Sears of the Corps of Engineers submitted to the Senate a report on a survey for the location of a canal to connect Lake Superior and the Mississippi River, which survey and report had been directed by legislation of a previous session. The intention of Congress was to ascertain which was the most feasible of three indicated routes, viz., by way of either the Saint Croix, Rum, or Upper Mississippi rivers. The question whether either of them was feasible, or whether the commercial benefits to be derived would justify the expenditure involved, was precluded. Consequently Major Sears confined himself to the question which of the three routes was the most feasible. The route via Allouez Bay and Brule and St. Croix rivers was recommended.

It is understood that the intention of the promoters of this undertaking was to provide for a canal from Lake Superior to St. Paul and Minneapolis, but the wording of the act authorizing the examination precluded a survey of any portion of the Mississippi as a connecting link, thus leaving the Mississippi end of the route over 300 miles from St. Anthony Falls. This of itself, however, is not important except as an element of cost.

PUGET SOUND AND LAKES UNION AND WASHINGTON CANAL.—Congress called for the report of Capt. T. W. Symons, Corps of Engineers, upon the survey of the waterway connecting the waters of Puget Sound, at Salmon Bay, with Lakes Union and Washington. The project contemplates making a fresh-water basin out of Salmon Bay, a navigable salt-water body, by raising its waters to, and maintaining them on a level with Lake Union, by means of a

lock at its mouth. It also calls for a lock between Lakes Union and Washington. The general route of the proposed canal or waterway leaves Puget Sound at the mouth of Salmon Bay; traverses the entire length of this bay; thence by a cut to Lake Union; through Lake Union to the eastern extremity; finally entering Lake Washington by a cut across a narrow ridge known as the Portage. The object of the improvement is to further develop the wonderful facilities of the city of Seattle as a Pacific coast seaport, by enabling vessels of all kinds to have access to these lakes and the extensive manufacturing and commercial interests involved.

CANAL FROM THE GREAT LAKES TO NEW YORK.—The Committee on Commerce in the Senate reported favorably on the bill to incorporate the Maritime Canal of North America, which gives in effect, authority to construct and operate a ship canal from the Great Lakes to New York. The course of the canal is around Niagara Falls, thence through Lake Ontario and down the St. Lawrence to a point near the international boundary; thence to Lake Champlain, to Hudson River and the ocean. The channels must be of sufficient width and depth to allow vessels drawing twenty feet of water to pass each other with safety; the locks large enough to admit vessels 550 feet in length and 65 feet in width. The incorporators are well known transportation and business men, engineers, manufacturers and bankers, some of them of large wealth. The bill seeks no appropriation, grant or guaranty from the Government now or hereafter. The privileges sought are extensive and far reaching, because the future greatest growth and development of the country will be in the region of the Great Lakes. Hon. F. A. Flower, Secretary of the International Deep Waterways Association and the recognized head of the deep-water movement, made a highly interesting statement before the Committee, which also forms part of its report.

A clause in the River and Harbor Act of the recent session directs the Secretary of War to prepare estimates for the construction of a ship canal by the most practicable route wholly within the United States, from the Great Lakes to the navigable waters of the Hudson River, of sufficient capacity to transport the tonnage of the lakes to the sea.

NICARAGUA CANAL.—Reports were made to both Houses of Congress favoring the construction of the Nicaragua Canal. The report of the House Committee deals with the canal project from the financial and engineering standpoints, and particularly analyses

the report of the Government Board appointed last year, of which Col. Ludlow was chairman. The feasibility and practicability of the construction having been admitted by the Board, the House Committee insists that the Government should aid the company in the completion of the work even if it costs over $150,000,000, on the ground that while the advantages to be derived by the United States from such corporation are untold, the risk would be practically nothing.

CHESAPEAKE AND DELAWARE BAYS CANAL.—Senator Elkins introduced a bill to provide for the construction of a canal through Maryland and Delaware to connect the waters of the Chesapeake and Delaware bays. The canal to have a depth of 30 feet, and width of 178 at the top and 100 at the bottom; locks of sufficient size to allow the passage of vessels of the largest size in use in ocean traffic. The canal when completed to be a military, naval, postal and public highway.

LAKE MICHIGAN AND WABASH RIVER CANAL.—Senator White made a favorable report on a resolution providing for the appointment of a commission of army engineers to survey and report plans, specifications and approximate estimates of the cost of construction of a ship canal from the lower shore of Lake Michigan to the Wabash River. Such a canal would afford a route from the Great Lakes to the Gulf without breaking bulk.

GROUND MAP OF THE UNITED STATES.—Favorable report was made on a proposition submitted by Mr. Cannon, of Utah, for the appointment of a commission to examine into the practicability, advisability and cost of establishing at Washington a ground map of the United States, on a scale of one square yard of map surface for each square mile of actual area, reproducing in earth and other materials, on scale, the boundaries and topography, and all the natural and artificial features of the surface, showing geographical divisions; also, mountains, hills and valleys, forests, lakes and streams, cities and villages.

To provide a map on the plan and scale proposed would require 625 acres. Upon such a map the Mississippi River with its Missouri tributary would be 4,506 yards long, and about 3 feet wide of actual water. Lake Michigan would contain 22,000 square yards of actual water surface. Mr. Cannon says he has expert testimony to the effect that neither will the cost be extravagant nor any physical difficulties in the way of the production; and that as to the advisa-

bility, there is not an hour in any working day of the year when legislators or administrative officers are not confronted by problems which could be more speedily, more justly, and more intelligently settled by reference to a map of this character.

At all events, considerable service might be rendered to the official knowledge of the country and to popular education by the work of such a commission, embodied in a report.

NAVASSA AND SWAN ISLANDS.—A resolution was under consideration in the Senate directing the Secretary of the Navy to appoint a board of three officers to proceed to Navassa and Swan islands in the West Indies to ascertain the practicability of establishing a coal station on either. These islands are said to have no anchorages, but shores like a stone wall. They are private property, and useful for fertilizing material.

METRIC SYSTEM.—An unsuccessful effort was made to fix the standard of weights and measures by the adoption of the metric system. The use of this system was made legal and permissive by an Act of Congress passed in 1866. That action did not make the system obligatory, but simply legal, permissive by anybody who desired to use it. The object of the present effort was to complete the work commenced in 1866; first, by adopting it in Government work; and then, at the commencement of the new century, to recognize it as the legal system throughout the country. In many of the Bureaus of the Government it is now in operation. In the Coast and Geodetic Survey office it has for years been practically the exclusive system. In other Bureaus it is used to a large extent. In the Post Office Department it is within the power of the Postmaster-General to have every letter weighed by the metric system; for every pound of mail matter placed in the office for transportation to foreign countries is now weighed and its transportation settled by that system.

Mr. Charles W. Stone, Representative from Pennsylvania, presented the subject forcibly in the House of Representatives; but he found it a difficult matter to convince that body that it would be quite as easy for the people to understand and to know that 30 grams make one ounce as that 20 pennyweights make one ounce. It being late in the afternoon of the day that the measure was under consideration, the House was in a mood to be entertained and easily impressed with shallow wit; which situation was taken advantage of by Mr. Otey (of Virginia), who kept the members in "laughter," "great laughter," "renewed laughter" (according to

the official report) by a skilful ridicule of technical and scientific words and phrases. Mr. R. W. Parker, of New Jersey, and Mr. Franklin Bartlett, of New York, were conspicuous opponents. The effort to apply the decimal system to length, capacity and weight, as well as to coins, was delayed for a season.

PACIFIC CABLES.—In the matter of a Pacific cable, Senator Frye made a report favoring its construction and maintenance by any private corporation which shall recognize the Spalding concession, and accept a subsidy of $160,000 per year for twenty years from the United States Government, the cable to extend from San Francisco to Honolulu, and by way of the Midway Islands to such points on the coast of Japan as the company may select. It will be recalled that at the session of Congress preceding the last, the Senate by a decisive vote adopted, and the House by a large minority supported, a resolution directing the immediate construction of a line to Honolulu at the sole expense of the United States.

A bill is pending authorizing M. J. Fahey, of New Haven, and associates to construct and operate a cable and telegraph from the State of Washington to Sitka or Juneau; thence to Saint Paul on Kadiak Island; thence to Ounalaska and some point in the Aleutian group where a connection can be made with the Siberian and Japan telegraph system.

It is the purpose of a bill reported by representative W. H. Doolittle to require every company, American or foreign, to apply hereafter to Congress for permission to land or operate any submarine cable. All cables now in operation have had such permission granted by the Department of State, subject to any future action of Congress; but as a matter of fact there is no law of Congress authorizing the Department to comply with such requests. Nor would a general law on the subject be desirable, because the circumstances surrounding, and the character of each project for laying a submarine cable, are likely to be peculiar to itself.

The Hydrographic Officer has recently issued a chart of the Submarine Cables of the world, principal connecting land lines, and coaling, docking and repairing stations.

COAST SURVEY.—Not long ago the Coast Survey made an effort to secure files of all maps relating to this country, and especially of all that are published by the authority of the States or Counties. The results, as far as the latter are concerned, were very meagre. Ten States sent small railroad maps, of various scales, issued by railroad commissioners, and of but little geographical value, viz.:

Alabama, Arkansas, Maine, Michigan, Missouri, Nebraska, North Dakota, Ohio, Pennsylvania, and Virginia. Ten States and Territories replied that they had no officially authorized maps, viz.: Arizona, Delaware, Iowa, Louisiana, Montana, Nevada, Oklahoma, Texas, West Virginia, and Alaska. California and New Jersey sent two geological maps. Ohio sent a small map with geological features superimposed. Nebraska sent a statistical map. The grand total being fourteen, from forty-five States and six Territories. Seventeen States made no response whatever; among these Connecticut, Illinois, Indiana, Maryland, Massachusetts and Vermont.

A new edition (the 4th) of the Coast Survey's Formulæ and Tables for the computation of geodetic positions has appeared. It differs from the preceding one by the introduction of a change in the notation of the formulæ, substituting for the older form one better in accord with modern custom, and, further, by an extension of the tables so as to take in the highest latitude of the United States territory, besides 5° added to the former southernmost limit.

The Survey has also issued a second enlarged and revised edition of "Geographic positions of trigonometric points in Massachusetts." These positions were determined between 1843 and 1894, and include also the work of the Borden Survey of 1832 to 1858. The number of stations occupied was 1,467, of which 447 belong to the Borden survey.

The exquisite instruments used by the Coast Survey, many of which are evolutions suggested by the experience of field parties, are constructed in the shop of the Survey. An advisory board, consisting of the most valued officers of the Survey, with the chief instrument maker (Mr. E. G. Fischer), considers all important matters referring to instruments, the aim being to make them as perfect as possible, taking advantage of the experience of all surveys in this as well as foreign countries.

ALASKA, AND ARCTIC REGIONS.—The Coast Survey has given out some new information * relating to the vicinity of Cook's Inlet and region to the westward, and the vicinity of Chatham and Peril straits. The information relating to Cook's Inlet is founded on the investigations made last summer by Prof. Dall, who, in connection with Prof. Becker, made a survey of that region with special reference to coal deposits. The charts of the territory around Cook's Inlet are far from correct, but they are compiled from the

* Bulletin No. 35.

most reliable sources. The Coast Survey is making every effort to have this valuable part of the region accurately charted.

The information covering the vicinity of Chatham and Peril straits from Point Gardner at the junction of Frederick Sound and Chatham Strait, to Povarotni Island in Peril Strait is compiled from notes made in 1895 by Commander E. K. Moore, U. S. N., commanding the Coast Survey steamer *Patterson*. It is very general in its character, and preliminary to the charts and sailing directions which will be published in the near future. Still, the notes are a valuable addition to the scant information already existing in print on this part of Alaska.

The new map of the Arctic regions, with tracks of search parties and the progress of discovery (40 x 40 inches), published by the U. S. Hydrographic Office, delineates the routes of all the explorations of the coasts since 1734. Forty-eight expeditions are indicated, and, in addition, the tracks of seventy-six parties. These tracks are represented in varied colors. Twenty explorations, or nearly half the total, are credited to Russia; nineteen to Great Britain; six to the United States; one to Austro-Hungary; one to Germany, and one to Norway.

The extent of trackage displayed on the European-Asiatic side of the chart, especially in the regions of the Russian possessions, is somewhat surprising. The numerous soundings indicated leave very little room for uncertain navigation. The most interesting study is on the American side of the chart. Here we have a comprehensive and graphic representation of the extensive routes taken by Parry, Franklin (probable), McClure, Collinson, Grinnell expedition, Kane and Hayes, McClintock, Nordenskiöld, DeLong, Lockwood and Brainard, and Peary, and others of less extent. The whole display is a most skilful representation of the progress of discovery and of our present knowledge of the Arctic regions. As nothing like it has been published heretofore, all educators and those interested in Arctic discoveries will appreciate the work of Commander C. D. Sigsbee, under whose direction, as U. S. Hydrographer, this important information has been made available.

The investigation of the gold and coal resources of Alaska commenced last year by Prof. Dall and Prof. Becker will be continued this year by Mr. J. E. Spurr and associates under direction of the Geological Survey. The examination will extend to the Upper Yukon region. The party will not return at the end of the season, but remain through the winter months, continuing the examination through the season of 1897. Prof. Becker, one of the best

gold mine experts in the world, is on an extended leave of absence, and is now engaged in the gold fields of South Africa under liberal arrangements with interested parties.

GEOLOGICAL SURVEY.—The work of surveying the Indian Territory, begun last summer and continued with only a few days' interruption since, is keeping a large force at work. A number of geological and topographical parties have resumed operations in other parts of the country. The appropriations available for the use of the Survey during the season of 1896–97, including the Indian Territory survey, aggregate $736,590.

Mr. Henry Gannett, the Geographer of the Survey, is giving attention to original inquiry on the subject of magnetics, and will during the year prepare several reports on this topic and others connected with physical geography. The work hitherto in charge of Mr. Gannett has been divided. He will hereafter devote himself exclusively to geographical work; the administration of the topographical branch will be under the immediate charge of Mr. Walcott, the Director.

FORESTRY.—The Commission organized by invitation of the Secretary of the Interior with the approval of Congress, for the purpose of making an investigation of various forestry problems, will proceed to Montana in July. From thence the tour will be extended through Idaho, Oregon, Washington, California, Arizona, New Mexico and Colorado.

The Secretary has requested an opinion upon the following points:

1. Is it desirable and practicable to preserve from fire and to maintain permanently as forestry lands those portions of the public domain now bearing wood growth for the supply of timber?

2. How far does the influence of forest upon climatic soil and water conditions make desirable a policy of forest conservation in regions where the public domain is principally situated?

3. What special legislation should be enacted to remedy the evils now existing?

Those composing the Commission are Charles S. Sargent, Alexander Agassiz, Henry L. Abbott, William H. Brewer, Arnold Hague and Gifford Pinchot. Prof. Wolcott Gibbs, President of the National Academy of Sciences, is an *ex-officio* member. Several preliminary meetings have been held. The Commission will return late in the autumn, and as soon as possible thereafter submit its report.

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